REMARKS

Reconsideration of the present application is respectfully requested.

Claim 15 has been rejected under 35 U.S.C. 112, second paragraph as being indefinite. More specifically, the Examiner has pointed out a typographical error in this claim. Applicants thank the Examiner for pointing out this cosmetic defect in claim 15.

Applicants have amended claim 15 to correct this typographical error.

Therefore, because claim 15 has been amended to correct the typographical error, it is respectfully requested that the rejection of claim 15 under 35 U.S.C. 112, second paragraph be withdrawn.

Claim 4 has been amended to correct a typographical error that amounted to a cosmetic defect.

Further, because claims 4 and 15 were amended to correct a cosmetic defect, the amendments to claims 4 and 15 have not narrowed the scope of these claims within the meaning defined in Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. ___ , (2002).

Claims 1 – 2, 4 and 7 – 10 have been rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,291,875 to Clark et al. (Clark). For the reasons discussed below, these claims, as amended, are now in condition for allowance.

Claim 1 has been amended to recite the novel embodiment disclosed, for example, on pg. 10, lines 17 – 25 in which fixed electrodes 40, 50 of the sensor are supported by the first fixed electrode supporting portion 41a, 51a at a first end and supported by the second fixed electrode supporting portion 41b, 51b at a second end and face the movable electrode 30 with a detection interval 60 defined therebetween that changes for detecting a dynamic quantity when the movable electrode is displaced.

Clark discloses a sensor that includes fixed electrodes 21f, 21g and a movable electrode 21d. (See FIG. 17). The movable electrode 21d is supported at opposite ends on a support substrate 10c. However, only a first end of each of the fixed electrodes 21f, 21g is supported on the substrate. More specifically, each of the fixed electrodes 21f, 21g has a cantilever structure with only one fixed electrode supporting portion. In comparison, the fixed electrodes of amended claim 1 have supporting portions at first and second ends.

Therefore, because Clark fails to disclose a sensor having a fixed electrode supported by first and second supporting portions at its first and second end, it is respectfully requested that the rejection of claim 1, as well as dependent claims 2 and 4 be withdrawn.

Further, a fixed electrode with supporting portions on its first and second ends leads to superior and unexpected results that amount to more than a mere design choice. For example, this structure permits the fixed electrode to deform in parallel with the movable electrode and therefore maintain a substantially constant detection distance within the detection interval regardless of temperature changes. (See pg. 16, lines 6 – 12).

Further regarding the rejection of claim 2, claim 2 recites the novel embodiment disclosed, for example, on pg. 11, lines 18 – 24 in which an axis connecting the first and second movable electrode supporting portions (or ends of the movable electrode at the substrate) 34a, 34b is approximately parallel to an axis connecting the first and second fixed electrode supporting portions (or ends of the first and second fixed electrodes at the substrate) 41a, 41b, 51a, 51b.

In comparison, Clark discloses a sensor in which an axis connecting the ends of the movable electrode 21d intersects with an axis connecting the ends of either of the fixed electrodes 21f, 21g.

Therefore, because Clark fails to disclose a sensor in which an axis connecting the first and second movable electrode portions is parallel to an axis connecting the first and second fixed electrode portions, it is respectfully requested that the rejection of claim 2 under 35 U.S.C. 102(e) be withdrawn.

Further regarding the rejection of claim 4, claim 4 recites the novel embodiment disclosed, for example, on pg. 10, lines 26 – 27 in which each of the fixed electrodes 40, 50 includes a connecting portion 42, 52 that connected to the first and second electrode supporting portions, 41a, 41b, 51a, 51b and also includes a pole portion 43, 53 protruding from the connecting portion 42, 52. A side face of the pole portion 43, 53 of the fixed electrode faces a side face of the pole portion 32 of the movable electrode.

The sensor disclosed in Clark includes a movable portion 21d having a weight portion and a pole portion protruding from the weight portion. However, as shown in FIG. 17, the fixed electrodes 21f, 21g are composed of a plurality of pole portions protruding from the substrate. The fixed electrodes do not include a connecting portion or supporting portions.

Therefore, because Clark fails to disclose a fixed electrode that includes a connecting portion connected to the first and second electrode supporting portions, it is respectfully requested that the rejection of claim 4 under 35 U.S.C. 102(e) be withdrawn.

Regarding the rejection of claim 7, claim 7 has also been amended to recite the novel embodiment of a fixed electrode 40, 50 supported by the first fixed electrode supporting portion 41a, 51a at a first end and the second fixed electrode supporting portion 41b, 51b at a second end and that faces the movable electrode 30 discussed above with respect to amended claim 1.

Therefore, the rejection of amended claim 7, as well as dependent claims 8 – 10 under 35 U.S.C. 102(e) for being anticipated by Clark should be withdrawn for the above-mentioned reasons with respect to amended claim 1.

Further regarding the rejection of claim 8, claim 8 recites the novel embodiment disclosed, for example, on pg. 12, lines 12 – 17 in which directions of the supporting portions of the movable electrode 34a, 34b and the directions of the supporting portions of the fixed electrode 41a, 41b, 51a, 51b are parallel to the displacement direction X of the movable electrode 30.

In comparison, Clark discloses a sensor in which the displacement direction of the movable electrode 21d intersects with the direction of the fixed electrodes 21f. Further, as discussed above with respect to claim 4, the fixed electrodes 21g, 21f disclosed in Clark do not include supporting portions.

Therefore, because Clark fails to disclose a sensor in which directions of the supporting portions of the movable electrode and the directions of the supporting portions of the fixed electrode are parallel to the displacement direction of the movable electrode, it is respectfully requested that the rejection of claim 8 under 35 U.S.C. 102(e) be withdrawn.

Further regarding the rejection of claim 9, claim 9 recites the novel embodiment disclosed, for example, on pg. 12, lines 4 – 11 in which a support portion 34a of the movable electrode 30 and the support portion 41a, 51a of the fixed electrode 30 are arranged on one side of the opening portion 21 and in which another support portion 34b of the movable electrode 30 and the other support portion 41b, 51b of the fixed electrode are arranged on an opposite side of the opening portion 21.

In comparison, Clark discloses a sensor in which the fixed portions 21f, 21g and the support portions of the movable electrode 21d are arranged on four different sides of the opening portion.

Therefore, because Clark fails to disclose a sensor in which the first support portions of the movable electrode and the fixed portions are arranged on an opposite side to the second support portions, it is respectfully requested that the rejection of claim 9 under 35 U.S.C. 102(e) be withdrawn.

Claims 3, 11 and 13 – 17 have been rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being obvious over Clark et al. For the reasons discussed below, these claims, as amended, are now in condition for allowance.

Regarding the rejection of claim 3, claim 3 depends from amended claim 1. Therefore, the rejection of claim 3 should be withdrawn for the above-mentioned reasons with respect to amended claim 1.

Regarding the rejection of claim 11, claim 11 recites the novel embodiment disclosed, for example, on pg. 28, lines 15 - 17 in which a frame member (first semiconductor layer) 103a has a uniform width in the displacement direction X of the movable electrode. More specifically, the widths A1 and A2 of the (first) frame parts of the frame member 103a are equal. These widths A1, A2 are defined by the displacement direction X.

Clark fails to teach or suggest that the width of the frame (semiconductor area surrounding the trench) is uniform in the displacement direction. However, the Examiner has asserted that it would have been obvious to one of ordinary skill in the art to have made the widths of the frame uniform. Applicants respectfully traverse this assertion.

The widths of the frame parts as recited in claim 11 lead to unexpected and superior results. A *prima facie* case of obviousness is rebutted by proof of unexpected or superior results. (See MPEP 2144.09 Aug. 2001). For example, when the width of the frame parts are uniform in the displacement direction as recited in claim 11 and shown in FIG. 11C, the movable portion 108 will displace upwardly in a perpendicular direction when the support substrate 140 is forcibly displaced. When the widths of the frame parts are non-uniform as in Clark, the movable portion 108 will move in an oblique upward direction as shown in FIG. 11B when the support substrate 140 is forcibly displaced and subsequently distort the sensor output. (See pg. 28, lines 1 – 24).

Therefore, because Clark fails to disclose a sensor having a frame with a uniform width in the displacement direction and because of the unexpected and superior results achieved therefrom, it is respectfully requested that the rejection of claim 11, as well as dependent claims 13 - 17 under 35 U.S.C. 102(e) or 103(a) be withdrawn.

Further regarding the rejection of claim 13, claim 13 recites the novel embodiment shown, for example, in FIG. 9a in which the movable electrode 108 is symmetrical with respect to a center line C of the frame member 103a. This novel arrangement leads to the unexpected and superior result of restraining displacement of the movable electrodes 111a, 111b of the movable portion 108 to the sides of the fixed electrodes 116a, 116b. (See pg. 31, lines 1 – 2).

As discussed above, Clark fails to teach or suggest a frame having a uniform width in the displacement direction. Accordingly, Clark fails to teach or suggest a movable electrode that is symmetric with respect to a center line C of the frame member.

Therefore, because Clark fails to teach or suggest a movable electrode that is symmetric with respect to a center line C of the frame member and also because of the superior and

unexpected results achieved therefrom, it is respectfully requested that the rejection of claim 13 under 35 U.S.C. 102(e) or 35 U.S.C. 103(a) be withdrawn.

Further regarding the rejection of claim 14, claim 14 recites the novel embodiment disclosed, for example, on pgs. 22, lines 24 – 27 and shown, for example, in FIG. 9A in which a width B1 of a first portion of the frame member supporting the first fixed electrode is approximately equal to a width B2 of a second portion of the frame member supporting the second fixed electrode. This first portion and second portion will be referred to as the second frame parts of the frame member. This arrangement of the frame member leads to the superior and unexpected results of preventing sensor output variation resulting from changes in the facing areas between the movable electrodes 111a, 11b and the fixed electrodes 116a, 116b. (See pg. 30, lines 6 – 16).

In comparison, referring to FIG. 17 of Clark, the widths of the portion of the frame member disclosed supporting the fixed electrodes 21f, 21g are clearly unequal.

Therefore, because Clark fails to teach or suggest a sensor in which a width of a first portion of the frame member supporting the first fixed electrode is approximately equal to a width of a second portion of the frame member supporting the second fixed electrode and also because of the superior and unexpected results achieved therefrom, it is respectfully requested that the rejection of claim 14 under 35 U.S.C. 102(e) or 35 U.S.C. 103(a) be withdrawn.

Further regarding the rejection of claim 15, claim 15 recites the novel embodiment shown, for example, in FIG. 9A in which the supporting portions of the first electrode and the second electrode are point-symmetrical with respect to the center of the frame.

As discussed above, Clark fails to teach or suggest a sensor in which a width of a first portion of the frame member supporting the first fixed electrode is approximately equal to a

width of a second portion of the frame member supporting the second fixed electrode. Accordingly, Clark fails to teach or suggest supporting portions of the first electrode and the second electrode that are point-symmetrical with respect to the center of the frame.

Further regarding the rejection of claim 17, claim 17 recites the novel embodiment disclosed, for example, on pg. 23, line 2 in which the widths of the first frame parts A1, A2 are equal to the widths B1, B2 of the second frame parts.

As discussed above, Clark fails to teach or suggest a sensor in which a width of a first portion of the frame member supporting the first fixed electrode is approximately equal to a width of a second portion of the frame member supporting the second fixed electrode. Accordingly, Clark fails to teach or suggest a sensor in which the widths of the first frame parts are equal to the widths of the second frame parts.

Claims 7 – 8 and 11 – 17 have been rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,450,031 to Sakai et al. (Sakai). For the reasons discussed below, these claims, as amended, are now in condition for allowance.

As discussed above, claim 7 has been amended to recite the novel embodiment of a fixed electrode 40, 50 supported by the first fixed electrode supporting portion 41a, 51a at a first end and supported by the second fixed electrode supporting portion 41b, 51b at a second end and that faces the movable electrode 30.

Sakai discloses a sensor that includes first and second fixed part electrodes 240, 250 and a movable part electrode 230 overhanging an opening 21. The movable part electrode 230 is supported on first and second sides of the opening 21 by supporting portions (anchoring parts) 233a, 233b. (See FIGS. 28A – 29 and col. 22, lines 33 - 54). However, the first and second fixed part electrodes 240, 250 only include supporting portions 241a, 241b at a first end. More

specifically, each of the fixed part electrodes 240, 250 has a cantilever structure with only one fixed electrode supporting portion 241a, 241b. In comparison, the fixed electrodes of amended claim 1 have supporting portions at first and second ends.

Therefore, because Sakai fails to disclose a sensor having fixed electrodes supporting portions at first and second ends of a fixed electrode, it is respectfully requested that the rejected of claim 7 under 35 U.S.C. 102(e) be withdrawn.

Regarding the rejection of claim 11, as discussed above claim 11 recites the novel embodiment in which a frame member (first semiconductor layer) 103a has a uniform width in the displacement direction X of the movable electrode. More specifically, the widths A1 and A2 of the first frame parts of the frame member 103a are equal.

Sakai discloses a sensor in which the width of the frame 11 in the displacement portion is non-uniform. Referring to, for example, FIG. 28A, the lower portion of the substrate below the opening portion 21 is clearly wider than the upper portion of the substrate above the opening portion 21.

Therefore, because Sakai fails to disclose a frame member with a uniform width in the displacement direction of the movable electrode, it is respectfully requested that the rejection of claim 11 under 35 U.S.C. 102(e) be withdrawn.

Regarding the rejection of claim 12, claim 12 depends from claim 11. Therefore, the rejection of claim 12 should be withdrawn for the above-mentioned reasons with respect to claim 11.

Regarding the rejection of claim 13, as discussed above, Sakai fails to disclose a frame having a uniform width in the displacement direction. Accordingly, Sakai fails to teach or

suggest a movable electrode that is symmetric with respect to a center line C of the frame member.

Therefore, because Sakai fails to teach or suggest a movable electrode that is symmetric with respect to a center line C of the frame member and also because of the superior and unexpected results achieved therefrom discussed above, it is respectfully requested that the rejection of claim 13 under 35 U.S.C. 102(e) be withdrawn.

Further regarding the rejection of claim 14, referring to FIG. 28A of Sakai, the first and second fixed electrodes 240, 250 are both supported on the same portion (the lower portion) of the frame member. Sakai fails to disclose a first portion of the frame member for supporting the first fixed electrode having the same width as a second portion of the frame member for supporting the second fixed electrode.

Therefore, because Sakai fails to teach or suggest a sensor in which a width of a first portion of the frame member supporting the first fixed electrode is approximately equal to a width of a second portion of the frame member supporting the second fixed electrode, it is respectfully requested that the rejection of claim 14 under 35 U.S.C. 102(e) be withdrawn.

Further regarding the rejection of claim 15, as discussed above, Sakai fails to disclose a sensor in which a width of a first portion of the frame member supporting the first fixed electrode is approximately equal to a width of a second portion of the frame member supporting the second fixed electrode. Accordingly, Sakai fails to teach or suggest supporting portions of the first electrode and the second electrode that are point-symmetrical with respect to the center of the frame.

Further regarding the rejection of claim 17, as discussed above, Sakai fails to teach or suggest a sensor in which the widths of the first frame parts are equal or in which the widths of

the second frame parts are equal. Accordingly, Sakai fails to teach or suggest a sensor in which the widths of the first frame parts are equal to the widths of the second frame parts. Further, referring to FIG. 28A, the widths of the right and left portions of the frame are clearly unequal to those of the top and bottom portions of the frame member.

Therefore, because Sakai fails to teach or suggest a sensor in which the widths of the first frame parts are equal to the widths of the second frame part, it is respectfully requested that the rejection of claim 17 under 35 U.S.C. 102(e) be withdrawn.

Claims 11 – 13 have been rejected under 35 U.S.C. 102(f) as being anticipated by FIG. 1A of the present application. This rejection is respectfully traversed.

The Examiner has asserted that FIG. 1A shows a sensor having a frame portion 210 with a uniform width in the direction of displacement X. Applicants respectfully disagree. More specifically, a closer observation of FIG. 1A reveals that the lower portion of the frame portion 210 is clearly larger than the upper portion of the frame portion. Applicants suggest that the Examiner closely observe above and below open portion 210 in FIG. 1A.

Therefore, because FIG. 1A fails to show a sensor having a frame portion with a uniform width in the direction of displacement, it is respectfully requested that the rejection of claim 11 under 35 U.S.C. 102(f) be withdrawn.

Claims 12 – 13 depend from claim 11. Therefore, the rejection of claims 12 – 13 under 35 U.S.C. 102(f) should be withdrawn for the above-mentioned reasons with respect to claim 11.

Claims 14, 16 and 17 have been rejected under 35 U.S.C. 102(f) as being anticipated by, or, in the alternative, under 35 U.S.C. 103(a) as being obvious over FIG. 1 of the present invention. This rejection is respectfully traversed.

Claims 14, 16 and 17 depend from claim 11. Therefore, the rejection of these claims should be withdrawn for the above-mentioned reasons with respect to claim 11.

Further, Applicants repeat the arguments made above with respect to the unexpected and superior results achieved by the claimed structure of the frame member.

Accordingly, it is respectfully requested that the rejection of claims 14, 16 and 17 under 35 U.S.C. 102(f) or 103(a) be withdrawn.

Claims 5 and 6 have been objected to as being dependent upon a rejected base claim. The Examiner has indicated that these claims contain allowable subject matter. Applicants have canceled these claims and added new claims 21 – 22, which correspond to claims 5 – 6, respectively, but in independent form including all of the limitations of the base claim.

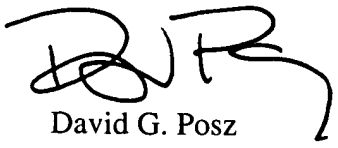
Accordingly, new claims 21 and 22 should be in condition for allowance.

New claims 18 – 20 are also presented for examination. These claims recite features that further distinguish the present invention from the art of record. Support for new claims 18 – 20 can be found, for example, on pg. 29, lines 16 – 21.

In view of the above amendments and remarks, the present application is now believed to be in condition for allowance. A prompt notice to that effect is respectfully requested.

Permission is given to charge any unanticipated fees to Deposit Account No. 50-1147.

Respectfully submitted,



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